

REMARKS

Claims 1-49 are all the claims pending in the application.

As a preliminary matter, the Examiner has acknowledged Applicants' claim for domestic priority. Applicants request that the Official Draftsperson review the drawings and that a completed Form PTO-948 be included in the next Office Action. As for the specification, Applicants submit the changes shown in the Appendix, changes which are fully supported in the Specification (FIGS. 3A, 3B).

Claims 1-49 are pending in the application. Claims 1-6, 17-34, 37, 38, 41, 44, and 47-49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuyama et al. (U.S. Patent No. 5,768,412) ("Mitsuyama") and further in view of Loui et al. (U.S. Patent No. 6,351,556) ("Loui"). Claim 33 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuyama and Loui as applied to claims 1-6, 17-34, 37, 38, 41, 44, and 47-49, and further in view of Zhou (U.S. Patent No. 6,353,700). Claims 7-16, 35, 36, 39, 40, 42, 43, 45, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants submit the following arguments to traverse the prior art rejections.

Applicants' invention relates to a method for segmenting a color image. In a exemplary embodiment, using an input image, the method calculates as a first value, the degree of difference between a pixel and a color of peripheral pixels based on a plurality of pixel values. Then the first value is converted into a value of a predetermined scale for obtaining a converted image. Finally, the converted image is segmented.

Claims 1-6, 17-34, 37, 38, 41, 44, and 47-49 are rejected § 103(a) as being unpatentable over Mitsuyama and Loui.

Mitsuyama discloses a region segmentation method for stained and non-stained images to discriminate between a background region and an object region where object particles exist. The method uses at least two of a red-colored image, a green-colored image, and blue-colored image to determine thresholds which identify the background region and the regions where object particles exist.

Loui discloses a method for comparing the content of a first and a second image. Specifically, the method determines the similarity between two images by extracting a portion of both images, portions which are determined to include a main subject area of each image. The main subject area of the images are divided into a plurality of blocks. A color histogram is computed for a block in each image and a histogram intersection value is computed by comparing the computed color histograms. Then, the similarity between the first and the second image is determined by determining a first threshold value for the computed histogram intersection value.

Applicants submit that the Examiner has improperly combined the references and has engaged in impermissible hindsight because the Examiner has failed to put forth a valid motivation to combine the teachings of Mitsuyama and Loui. The Examiner states that the invention of Loui provides Mitsuyama with a system which has the advantage of improved classification of images by block-based comparison. In Mitsuyama, however, only one static image is processed (col. 8, lines 60-62) and therefore, there is no benefit in having the advantage of improved classification of images as taught by Loui. As there is nothing in either reference

which suggests any motivation for, or the desirability of, an improved classification of images by block-based comparison, the skilled artisan would not combine Mitsuyama with Loui in the manner espoused by the Examiner.

Further, Loui fails to teach the step of “obtaining a converted image by converting the first value into a value of a predetermined scale,” as recited in claim 1, for the combination of Mitsuyama and Loui to render claim 1 obvious. The Examiner states that although Mitsuyama does not explicitly teach the step of obtaining a converted image by converting the first value into a value of a predetermined scale, the Examiner alleges that Loui teaches such a feature. In Loui, however, no such image conversion is taught. Each image in the method taught by Loui is converted into blocks and then a color histogram is computed for each block for comparison purposes. In contrast, claim 1 recites that a first value which represents a degree of difference between a pixel and peripheral pixels of one image is calculated and then the first value is converted into a predetermined scale to obtain a converted image. Nowhere in Loui is there any teaching or suggestion of converting an analogous first value to obtain a converted image. After all, there simply is no purpose for obtaining a converted image in Loui because Loui serves the purpose of comparing the similarity of two images. Since the Examiner has not shown that the step of obtaining a converted image not expressly disclosed or suggested by Mitsuyama or Loui is obvious to one skilled in the art, claim 1 is patentable.

Claims 2-6, 17-31, 42, and 44-49 which depend from claim 1, claim 33 which depends from claim 32, claim 37 which depends from claim 34, and claim 41 which depends from claim 38, are believed to be patentable at least for the reasons presented above for claim 1. Further, with respect to claim 33, Zhou fails to make up for the deficiencies of Mitsuyama and Loui.

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In addition, claim 2 is believed to be patentable because the combination of Mitsuyama and Loui fails to disclose a step of segmenting a "converted image based on a region growing method," as recited in the claim. In the "region growing method," a small region is merged with neighboring areas that are similar, or satisfy certain parameters. To the contrary, the division of the image into blocks in Loui (col. 5, lines 27-33) does not describe a method to increase the size of a specific region in an image according to certain parameters, as required in a region growing method. Instead, Loui describes the division of an image into predetermined blocks for the comparison of two images, and not for the segmenting of an image.

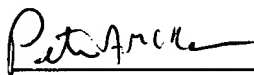
Claims 3-6, 17-31, 44, 47-49, which depend from claim 2, are believed to be patentable at least for the reasons discussed above for claim 2.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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